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(54) Title: **DEVICE AND METHOD FOR CONTACTING POCOLITER VOLUMES OF FLUIDS**

(57) Abstract: The invention features devices for mixing fluids, e.g., for lysing cells, and methods of use thereof. One device is based on the ability to control the flow of fluids, e.g., by contact angle and channel size. Fluids in this device can be divided to form segments of controlled volume, which are then brought together to initiate mixing. An exemplary use of the device is for the lysis of single cells. Another device is based on the ability to two mix two fluids in a channel and affinity capture of analytes. The devices can be integrated on the same chip with other devices, for example, for cell handling or analysis of DNA, mRNA, and proteins released from the lysis of a cell.

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